BULLETIN

OF THE INSTITUTE OF METALS

VOLUME I JULY 1952 PART II

INSTITUTE NEWS

Annual Autumn Meeting, Oxford, Monday–Friday, 15–19 September 1952

As previously announced, the 1952 Annual Autumn Meeting will be held in Oxford from Monday to Friday, 15 to 19 September, inclusive. The Oxford Local Section Committee (Chairman: Dr. H. M. Finniston) is acting as Reception Committee; a Ladies' Committee has been formed, under the Chairmanship of Mrs. Hume-Rothery; and the meeting is being held under the distinguished patronage of The Mayor of Oxford; the Vice-Chancellor of Oxford University; Viscount Nuffield, G.B.E., F.R.S.; Lord Cherwell, P.C., F.R.S.; Dr. T. E. Allibone, F.R.S.; Fraser W. Bruce, Esq.; Sir John Cockcroft, C.B.E., F.R.S.; Colonel Sir Ralph Glynn, M.C., D.L., M.P.; Kenneth Hall, Esq.; Sir Cyril Hinshelwood, F.R.S.; Major Albert Pam, O.B.E.; Professor F. E. Simon, C.B.E., F.R.S.; R. Lewis Stubbs, Esq.; and the President of the Oxford Chamber of Trade.

The Twenty-Third Annual Autumn Lecture will be delivered in the Sheldonian Theatre—on the evening of Monday, 15 September—by Professor H. W. Swift, M.A., D.Sc., M.I.Mech.E., whose subject will be the plastic deformation of metals.

For the convenience of members, hotel accommodation in Oxford has been reserved by the Institute, and special arrangements have been made for members and guests (men only in college, and a few ladies in hostels) to have rooms in Magdalen College. It has been represented to the Council that many members—and the younger ones in particular—would appreciate the reservation of rooms in college, and the Council therefore hopes that the full amount of accommodation will be taken up. The charge for rooms in college will be 30*s.* per day, inclusive of all meals and gratuities. Common rooms and a bar will be placed at members' disposal.

It is hoped that there will be a large attendance of members and guests. Those who intend to be present (including those from the Oxford area) are requested to advise the Secretary as early as possible, stating the probable number of guests who will be accompanying them. This information is of much administrative value, if received well in advance of the completed meeting reply forms.

Members of overseas metallurgical societies will be welcome to attend the meeting and participate on the same terms as members of the Institute.

PROVISIONAL PROGRAMME

The provisional programme is detailed below. The final programme, with reply form, will be sent to all members (and members of overseas metallurgical societies who advise the Secretary of their desire to receive it) at the end of June or early in July.

Monday, 15 September

Location: Randolph Hotel, Oxford.

2.30 to 8 p.m.—The Secretary's office will be open for the registration of members and guests.

Location: Sheldonian Theatre, Oxford.

8.30 p.m.—Twenty-Third Annual Autumn Lecture, by Professor H. W. Swift, M.A., D.Sc., M.I.Mech.E., on the plastic deformation of metals.

Tuesday, 16 September

Location: The Clarendon Laboratory, Parks Road, Oxford.

9 a.m.–12.45 p.m.—The Secretary's office will be open for the registration of members and guests.

9.30 a.m.—Welcome by The Right Worshipful the Mayor of Oxford (Councillor W. C. Walker, O.B.E.) and the Vice-Chancellor of the University (Sir Maurice Bowra, M.A., D.Litt.)

9.45 a.m.—Two simultaneous sessions for the discussion of scientific papers.

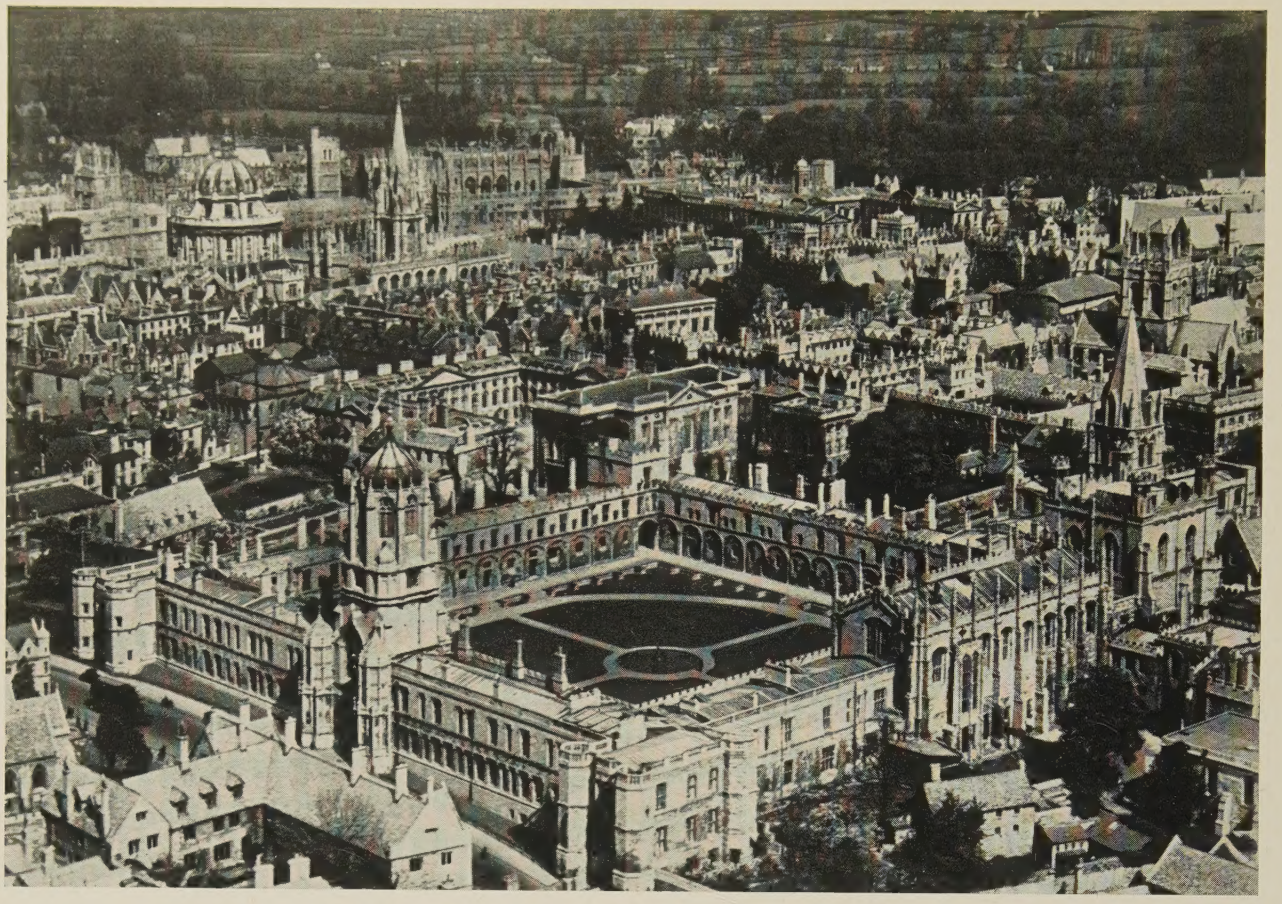
(*A*) Papers of industrial interest (in the lecture theatre of The Clarendon Laboratory, Parks Road, Oxford).

(1) M. Cook, W. P. Fentiman, and E. Davis: "Observations on the Structure and Properties of Wrought Copper–Aluminium–Nickel–Iron Alloys" (No. 1364; April 1952).

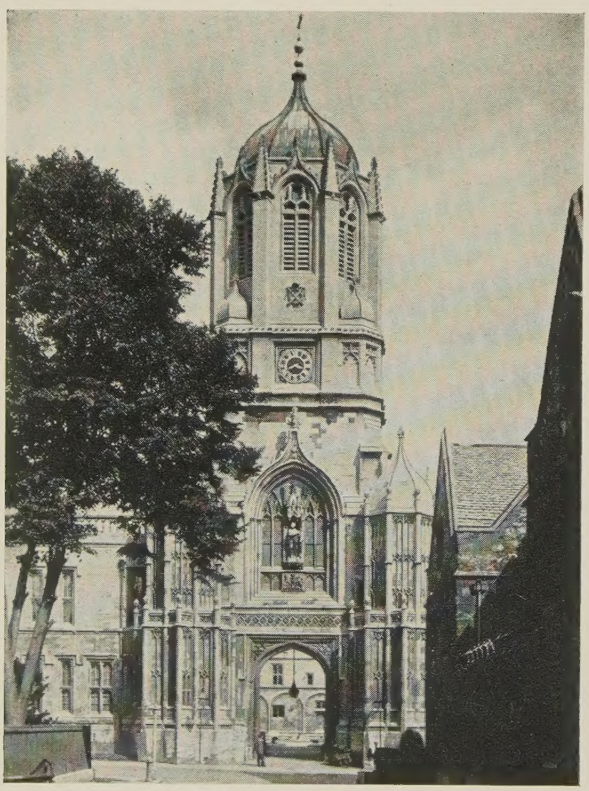
(2) G. L. J. Bailey and H. C. Watkins: "The Flow of Liquid Metals on Solid Metal Surfaces and Its Relation to Soldering, Brazing, and Hot-Dip Coating" (No. 1325; Oct. 1951).

(*B*) Papers on physical metallurgy (in the lecture theatre of the Electrical Engineering Laboratory, next to The Clarendon Laboratory).

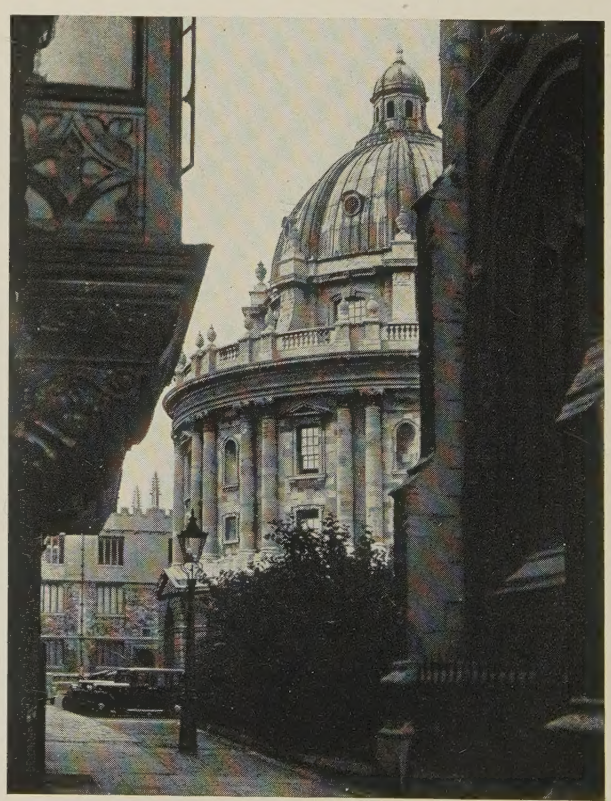
(1) *Jointly:* B. W. Mott and H. R. Haines: "The Application of Polarized Light to the Examination of Various Anisotropic Metals and Intermetallic Phases" (Aug. 1952); and B. W. Mott and



Aerial View of Oxford, with Christ Church College in the Foreground.



Christ Church College, Oxford : Main Entrance and Tom Tower.



St. Mary's Entry, Oxford, with the Radcliffe Camera.

Illustrations by permission of Oxford Publicity Board and Alden and Co., Ltd.

H. R. HAINES: "The Metallography of Uranium" (Aug. 1952).

(2) *Jointly:* W. M. LOMER and P. L. PRATT: "The Opaque-Stop Microscope as a Means of Studying Surface Relief" (No. 1361; Mar. 1952); P. L. PRATT and S. F. PUGH: "Twin Accommodation in Zinc" (Aug. 1952); and J. A. RAMSEY: "Some Observations on the Deformation of Polycrystalline Zinc" (No. 1338; Dec. 1951).

12.30 p.m.—Adjournment.

11–12 a.m.—Ladies will meet for coffee at Halifax House.

1.45/2.0 p.m.—Visits to works, laboratories, and other local places of interest (see next col.).

8.15 p.m.—*Dinner in the Hall of Magdalen College, by invitation of the Chairman and Committee of the Oxford Local Section (evening dress (tails or dinner jacket) or uniform, with decorations).

Wednesday, 17 September

Location: The Clarendon Laboratory, Parks Road, Oxford.

9.0 a.m.–12.45 p.m.—The Secretary's office will be open.

9.30 a.m.—Two simultaneous sessions for the discussion of scientific papers:

(*A*) Papers of industrial interest (in the lecture theatre of The Clarendon Laboratory).

(1) *Jointly:* A. CIBULA: "The Grain Refinement of Aluminium Alloy Castings by Additions of Titanium and Boron" (No. 1319; Sept. 1951); and J. A. REYNOLDS and C. R. TOTTLE: "The Nucleation of Cast Metals at the Mould Face" (No. 1328; Oct. 1951).

(2) *Jointly:* N. B. RUTHERFORD: "The Effect of Mould Material and Alloying Elements on Metal/Mould Reaction in Copper-Base Alloys" (No. 1305; June 1951); and N. B. RUTHERFORD: "The Effect of Metal/Mould Reaction on 85 : 5 : 5 : 5 Leaded Gun-Metal Sand Castings" (No. 1381; June 1952).

(*B*) Papers on alloy constitution (in the lecture theatre of the Electrical Engineering Laboratory, next to The Clarendon Laboratory).

(1) *Theme: Equilibrium Diagrams and Theory of Copper Alloys.*

Jointly: R. CABARAT, P. GENCE, L. GUILLET, and R. LE ROUX: "Thermo-elastic Analysis of Transformations in Copper Alloys" (No. 1336, Dec. 1951); P. GREENFIELD and G. V. RAYNOR: "The Constitution of the Copper-Rich Copper–Zinc–Germanium Alloys" (No. 1357; Mar. 1952); J. O. BETTERTON, Jr., and W. HUME-ROTHERY: "The Equilibrium Diagram of the System Copper–Gallium in the Region 30–100 At.-% Gallium" (No. 1368; April 1952); W. HUME-ROTHERY, J. O. BETTERTON, Jr., and J. REYNOLDS: "The Factors Affecting the Formation of 21/13 Electron Compounds in Alloys of Copper and of Silver" (No. 1388; July 1952); and J. REYNOLDS, W. A. WISEMAN, and W. HUME-ROTHERY: "The Equilibrium Diagram of the System Copper–Indium in the Region 25–35 At.-% Indium" (Aug. 1952).

(2) *Theme: Equilibrium Diagrams and Theory of Alloys of the Transition Metals.*

Jointly: B. R. COLES and W. HUME-ROTHERY: "The Equilibrium Diagram of the System Nickel–Manganese" (No. 1327; Oct. 1951); G. A. GEACH and D. SUMMERS-SMITH: "The Alloys of Molybdenum and Tantalum" (No. 1334; Nov. 1951); A. H. SULLY: "The Sigma Phase in Binary Alloys of the Transition Elements" (No. 1339; Dec. 1951); POL DUWEZ: "Allotropic Transformation in Titanium–Zirconium Alloys" (No. 1376; May 1952); R. W. FLOYD: "The Formation of the Ni_3Al Phase in Nickel–Aluminium Alloys" (No. 1380; June 1952); A. TAYLOR and R. W. FLOYD: "The Constitution of Nickel-Rich Alloys of the Nickel–Chromium–Titanium System" (No. 1383; July 1952); H. T. GREENAWAY: "The Constitutional Diagram of the Chromium–Tungsten System" (No. 1384; July 1952); W. B. PEARSON and W. HUME-ROTHERY: "The Constitution and Structure of Nickel–Vanadium Alloys in the Region 0–60 At.-% Vanadium" (Aug. 1952); Z. S. BASINSKI and J. W. CHRISTIAN: "The Cubic-Tetragonal Transformation in Manganese–Copper Alloys" (Aug. 1952).

12.30 p.m.—Adjournment.

1.45/2.0 p.m.—Visits to works, laboratories, and other local places of interest (see below).

8–11.30 p.m.—Reception, with dancing, in the City Hall, by invitation of The Right Worshipful the Mayor of Oxford (evening dress or uniform).

Thursday, 18 September

Location: The Clarendon Laboratory, Parks Road, Oxford.

9.15 a.m.–12.45 p.m.—The Secretary's office will be open.

9.30 a.m.—Informal Discussion on "Grain Boundaries", arranged by the Metal Physics Committee.

12.15 p.m.—Concluding business and votes of thanks.

1.45/2.0 p.m.—Visits to works, laboratories, and other local places of interest (see below).

8.15 p.m.—*Dinner in the Hall of Magdalen College, by invitation of the Chairman and Committee of the Oxford Local Section (evening dress (tails or dinner jacket) or uniform, with decorations).

Friday, 19 September

All-day tour of the Cotswolds.

VISITS

The following series of visits is being arranged:

Technical Visits

Aluminium Laboratories, Ltd., Banbury.

Associated Electrical Industries, Ltd., Research Laboratories, Aldermaston.

Atomic Energy Research Establishment, Harwell.

British Railways Workshops, Swindon.

The Clarendon Laboratory, Oxford.

Northern Aluminium Company, Ltd., Banbury.

Nuffield Organization, works at Abingdon (manufacture of M.G. and Riley cars).

Nuffield Organization, works at Cowley (manufacture of Morris cars).

Pressed Steel Company, Ltd., Cowley.

* Because of the limitation, as regards numbers, for dining in the College Hall, a dinner—by invitation of the local industries—will take place on two consecutive evenings. Guests will be given an opportunity to state which evening is most convenient to them.

St. John's College, Oxford: Garden Front.

It is regretted that, owing to the rebuilding of the Laboratory, no official visit can be arranged to the Metallographic Section of the Inorganic Chemistry Laboratory, but Dr. Hume-Rothery will be most glad to see any members who call privately.

Non-Technical Visits

The Colleges (with guides).
Blanket factory of Charles Early and Company, Ltd., at Witney.
Blenheim Palace, Woodstock (with guides).
Chastleton House (between Chipping Norton and Moreton-in-the-Marsh) via Rollright Stones (third century B.C.)
Sir Ralph Glynn's mechanized farm.
University Press.

Members and guests will also be able to visit:

Ashmolean Museum and Art Gallery.
Bodleian Library.
Botanic Garden.
Christ Church Cathedral.
Church of St. Mary the Virgin.
History of Science Museum.
Imperial Forestry Institute.
Taylor Institution.
University Museum.

Binding Cases

Members who intend to bind their *Journals* and *Metallurgical Abstracts* regularly are requested to place a standing order for binding cases with the Secretary, so as to enable an accurate estimate to be made of future requirements. Cloth binding cases for 1945 and subsequent years are still available, *free of charge*, to members on request.

Appeal to Industry for Regular Financial Support of the Institute's Work

The following additional donations are gratefully acknowledged.

A full list of contributions received up to 31 December 1951 was printed on pp. 346–347 of the February 1952 issue of the *Journal*; lists of donations subsequently received have been published on pp. 39 (Feb.), 51 (March), 65 (April), and 81 (June) of the *Bulletin*.

Annual Donation Under Covenant, for Not Less Than 7 Years

	Net £	s.	d.	*Gross After Recovery of Tax* £	s.	d.
Tennant (C.), Sons and Co., Ltd.	26	5	0	50	0	0

Other Donation

Crabtree (J. A.) and Co., Ltd. .	.	.	.	10	10	0

Missing Addresses

Addresses are wanted of the following members:

Name	*Last located at:*
Atkins, Lawrence John	Ndola, N. Rhodesia.
Bartnik, George (*Student*)	Harrow, Middx.
Conder, Peter (*Junior*)	Kenya.
Dutt, Asoke Kumar (*Student*)	Leeds, Yorks.
Harris, Louis Reuben (*Junior*)	Bristol.
Laban, Norman Roscoe	Burnham-on-Sea, Som.
McKnight, Ian Bertram	Lewisham, London.
McLeod, Ian	Bickley, Kent.
Mathias, Ernest Victor	Bromley, Kent.
Shelvington, William Edwin	Canada.

Committees for 1952–53

The constitution of committees for 1952–53 is as follows :

Finance and General Purposes Committee

BAER, Mr. Alfred (*Chairman*).
BAILEY, Mr. G. L.
BOLTON, Mr. E. A.
DOREY, Dr. S. F.
GRAHAM, Mr. A. B.
MURPHY, Professor A. J.
SMOUT, Sir Arthur.
TASKER, Mr. H. S.

Ex-officio :

SMITHELLS, Dr. C. J. (*President*).
THOMPSON, Professor F. C. (*Senior Vice-President*).
JONES, Mr. E. H. (*Honorary Treasurer*).
SMITH, Mr. Christopher (*Chairman, Publication Committee*).

Local Sections Committee

BOLTON, Mr. E. A. (*Chairman*).
ASHTON, Mr. A. B.
GARSIDE, Dr. J. E.
KENNETT, Dr. S. J.
WALTON, Mr. J. S.

Ex-officio :

SMITHELLS, Dr. C. J. (*President*).
THOMPSON, Professor F. C. (*Senior Vice-President*).
JONES, Mr. E. H. (*Honorary Treasurer*).

SYMONDS, Mr. H. H. (*Chairman, Birmingham Local Section*).
MATTHEWS, Mr. A. W. (*Honorary Secretary, Birmingham Local Section*).
RANSLEY, Dr. C. E. (*Chairman, London Local Section*).
RHODES, Dr. E. C. (*Honorary Secretary, London Local Section*).
FINNISTON, Dr. H. M. (*Chairman, Oxford Local Section*).
FROST, Dr. B. R. T. (*Honorary Secretary, Oxford Local Section*).
FOWLER, Mr. E. A. (*Chairman, Scottish Local Section*).
HAY, Mr. Matthew (*Honorary Secretary, Scottish Local Section*).
HALLETT, Mr. M. M. (*Chairman, Sheffield Local Section*).
MACDOUGALL, Mr. A. J. (*Honorary Secretary, Sheffield Local Section*).
SPRING, Mr. K. M. (*Chairman, South Wales Local Section*).
GRENFELL, Mr. W. H. (*Honorary Secretary, South Wales Local Section*).

Medal Committee

PRESIDENT (*Chairman*).
SENIOR VICE-PRESIDENT.

and not more than four Institute of Metals (Platinum) Medallists who are, or have been, Members of Council (to be selected by the President), with power to the President to co-opt not more than two other persons.

Metal Physics Committee

QUARRELL, Professor A. G. (*Chairman*).
BOWDEN, Dr. F. P.
COTTRELL, Professor A. H.
FINNISTON, Dr. H. M.
FRANK, Dr. F. C.
HIGNETT, Mr. H. W. G.
HUME-ROTHERY, Dr. W.
KING, Mr. Ronald.
LOMER, Mr. W. M.
MCLEAN, Mr. D.
NABARRO, Mr. F. R. N.
NUTTING, Dr. J.
OLIVER, Mr. D. A. (representing the Iron and Steel Institute and the British Iron and Steel Research Association).
RAYNOR, Professor G. V.
RICHARDS, Dr. T. Ll.
ROTHERHAM, Mr. L.

Ex-officio :

SMITHELLS, Dr. C. J. (*President*).
SMITH, Mr. Christopher (*Chairman, Publication Committee*).

Metallurgical Engineering Committee

THOMAS, Mr. W. J. (*Chairman*).
BAKER, Mr. W. A.
BOLTON, Mr. E. A.
BOWMAN, Mr. W. H.
CAMPBELL, Mr. D. F.
DAVIES, Mr. C. E.
FORD, Professor H.
MILLER, Mr. H. J.
PATON, Mr. Charles.
SALTER, Mr. J.
SINGER, Dr. A. R. E.
SWINDELLS, Dr. N.
WALTON, Mr. J. S.
WILKINSON, Mr. R. G.

Ex-officio :

SMITHELLS, Dr. C. J. (*President*).
SMITH, Mr. Christopher (*Chairman, Publication Committee*).

Nominations Committee

SMITHELLS, Dr. C. J. (*President*) (*Chairman*).
MURPHY, Professor A. J. (*Past-President*).
TASKER, Mr. H. S. (*Past-President*).
THOMPSON, Professor F. C. (*Senior Vice-President*).

Publication Committee

SMITH, Mr. Christopher (*Chairman*).
BAKER, Mr. W. A.
BOLTON, Mr. E. A. (representing the Local Sections Committee).
FORD, Professor H.
FOX, Dr. F. A.
GADD, Mr. E. R.
INGLIS, Dr. N. P.
JENKINS, Dr. Ivor.
PARKER, Dr. R. T.
PHILLIPS, Mr. H. W. L.
POWELL, Mr. A. R.
RAYNOR, Professor G. V.
THOMPSON, Professor F. C.
TURNER, Mr. T. H.

Ex-officio :

SMITHELLS, Dr. C. J. (*President*).
BAER, Mr. Alfred (*Chairman, Finance and General Purposes Committee*).
JONES, Mr. E. H. (*Honorary Treasurer*).
QUARRELL, Professor A. G. (*Chairman, Metal Physics Committee*).
THOMAS, Mr. W. J. (*Chairman, Metallurgical Engineering Committee*).

Election of Members

The following 18 Ordinary Members, 2 Junior Members, and 2 Student Members were elected on 7 May 1952 :

As Ordinary Members

AUDISIO, Francesco, Foundry Inspector, Società Mineraria e Metallurgica di Pertusola, Piazza della Vittoria 11 A/1, Genova, Italy.

BHATT, Gunvantrai V., B.Sc., Works Manager, The Indian Smelting and Refining Co., Ltd., 101 Sion Road, Sion, Bombay 22, India.

CAYRON, Robert, Metallurgical Engineer, Research Department, Union Minière du Haut Katanga, Jadotville, Belgian Congo.

CHILD, George W., General Manager, Frederick Smith and Co., Ltd., Salford.

CLARK, Arthur W. S., B.Sc., A.R.I.C., Chemist, Venesta, Ltd., North Woolwich Road, Silvertown, London, E.16.

GIBB, Henry, M.A., B.Sc., A.R.I.C., Teacher of Science, Gateside Junior Secondary School, Cambuslang, Glasgow.

GWATHMEY, *Professor* Allan T., B.S., Ph.D., Professor of Physical Chemistry, Cobb Chemical Laboratory, University of Virginia, Charlottesville, Va., U.S.A.

KÖNIG, Werner, Dr.Ing.chem., Technical President, Schweizerische Metallwerke Selve & Co., Thün, Switzerland.

LANGFORD, Kenneth Ernest, A.I.M., A.R.I.C., Chief Chemist and Metallurgist, Evered and Co., Ltd., Smethwick, Staffs.

MACKINTOSH, Donald, Works Manager, The Non-Ferrous Tube Company (Pty.), Ltd., P.O. Box 484, Springs, Transvaal, South Africa.

MCQUILLAN, Alan Dennis, B.Sc., Ph.D., Metallurgy Department, University of Birmingham.

PERRYCOSTE, Wykeham Bernard Cuthbert, B.A., Production Manager (Overseas), The British Aluminium Co., Ltd., Norfolk House, St. James's Square, London, S.W.1.

SCHWICHTENBERG, C. F., Dipl.Ing., Metallgesellschaft A.G., Frankfurt-am-Main, Germany.

SPENCER, *Sir* Thomas, M.I.E.E., Chairman and Managing Director, Standard Telephones and Cables, Ltd., 63 Aldwych, London, W.C.2.

SWEENEY, Thomas, Rolling Mill Works Manager, Evered and Co., Ltd., Smethwick, Staffs.

TAYLOR, Thomas A., M.Sc., A.M.I.E.E., Research Manager, Pyrotenax, Ltd., Hebburn-on-Tyne, Co. Durham.

WILLIAMS, Cecil Hamlyn, Managing Director, Stein and Atkinson, Ltd., Parnell House, 25 Wilton Road, London, S.W.1.

YOUNG, Richard Dilworth, B.Sc., A.M.I.Mech.E., Director, T.I. Aluminium, Ltd., Redfern Road, Tyseley, Birmingham 11.

As Junior Members

BROMAGE, Kenneth, B.Sc., Assistant Metallurgist, J. Stone and Co. (Charlton), Ltd., Charlton, London, S.E.7.

COE, Henry Campbell, B.Met.E., M.Eng.Sc., Research Assistant, University of Melbourne, Vic., Australia.

As Student Members

BRANTON, J. A., Student of Metallurgy, University of Melbourne, Vic., Australia.

WILLIAMSON, John Brian Peter, B.A., Research Student, Department of Physical Chemistry, University of Cambridge.

The following 14 Ordinary Members, 1 Junior Member, and 3 Student Members were elected on 2 June 1952 :

As Ordinary Members

DICKSON, Robert Harper, Director, A. McGown and Co., Ltd., Ulster Galvanizing Works, Mountpottinger Road, Belfast.

GOLESTANEH, Ahmea-Ali, B.Sc., Research Student, College of Technology, Manchester 1.

JACKSON, Eric, A.Met., B.Sc.Eng., A.I.M., Metallurgical Chemist, Sheffield Smelting Co., Ltd., Royds Mill Street, Sheffield 4.

MARSHALL, Leslie, A.I.M., A.F.R.Ae.S., A.I.Mech.E., A.M.I.P.E., Chief Metallurgist, Electro-Hydraulics, Ltd., Liverpool Road, Warrington, Lancs.

PEARSON, Eric John Barnes, M.Eng., A.M.I.E.E., Technical Superintendent, The General Electric Co., Ltd., Landor Street, Birmingham 8.

PETCH, Norman James, B.Sc., B.Met., Ph.D., Reader in Metallurgy, Leeds University.

SCOTT, David B., B.S., Met.E., Metallurgical Engineer, Research Department, American Can Company, Maywood, Ill., U.S.A.

SLAGLE, George M., President, Slagle Beryllium Company, Havertown, Pa., U.S.A.

SMITH, Edward, Non-Ferrous Foundry Manager, Jackson Brothers (Milton), Ltd., Milton, Stoke-on-Trent, Staffs.

TENNANT, Julian William F., Director, C. Tennant, Sons, and Co., Ltd., 4 Copthall Avenue, London, E.C.2.

WAUGH, David W., Director, William Waugh, Ltd., 6/8 Dumbiedykes Road, Edinburgh 8.

WAUGH, John, Director, William Waugh, Ltd., 6/8 Dumbiedykes Road, Edinburgh 8.

WESSON, Harry Chamberlain, M.A., B.Sc., F.R.I.C., Director, Denby Metals, Ltd., Denby, Derby.

WEVER, *Professor* Franz, Direktor, Max Planck Institut für Eisenforschung, August-Thyssen Strasse 1, Düsseldorf, Germany.

As Junior Member

COFFIN, Ronald George, B.Sc., L.I.M., Metallurgist, Research Laboratories, The General Electric Co., Ltd., North Wembley, Middlesex.

As Student Members

EVANS, John Peter, Research Assistant, Research and Development Department, The British Oxygen Co., Ltd., Morden, London, S.W.19.

EVANS, Peter Eric, B.A., Research Student, Metallurgy Department, Cambridge University.

SCHWARZKOPF, Walter M., Student of Metallurgy, Eidgenössische Technische Hochschule, Zürich, Switzerland.

" Metallurgical Abstracts " Volumes Wanted

The Institute will pay £1 each for bound volumes, in good condition, of *Metallurgical Abstracts*, 1940 (vol. 7), 1941 (vol. 8), 1942 (vol. 9), and 1943 (vol. 10), and £1 per volume for complete sets of monthly parts of the *Journal and Metallurgical Abstracts* covering the above-mentioned volumes.

The Institute will also pay 7*s*. 6*d*. each for copies, in good condition, of the following monthly parts of the *Journal and Metallurgical Abstracts* :

1940, Jan., Mar., Apr.
1941, July.
1942, July.
1943, May, July, Aug., Sept., Oct.

Copies offered for sale should be addressed to the Secretary.

The Cold Working of Non-Ferrous Metals and Alloys

The five papers contributed to the Symposium on "Metallurgical Aspects of the Cold Working of Non-Ferrous Metals and Alloys", held in connection with the Annual General Meeting of the Institute in March 1951, have now been reprinted, together with the discussion upon them, as No. 12 in the Monograph and Report Series.

The price of the volume—which is cloth-bound and contains 206 pp. and 20 plates—is 15*s.* (or $2.50), post free. Each member may obtain one copy at the special price of 7*s.* 6*d.* (or $1.50), post free.

PERSONAL NOTES

MR. S. C. ANTHONY has left Henry Wiggin and Co., Ltd., to take up an appointment as Assistant Works Manager with The Ever Ready Co. (Great Britain), Ltd., Edmonton, London, N.18.

MR. P. CLARK has gone to Kuwait to relieve the Corrosion Engineer of the Anglo-Iranian Oil Co., Ltd. He expects to return to England in January 1953.

PROFESSOR POL DUWEZ has been appointed Professor of Mechanical Engineering at the California Institute of Technology, Pasadena 4, Calif., U.S.A.

PROFESSOR R. S. HUTTON has been elected an honorary Fellow of the Imperial College of Science and Technology.

DR. PAUL D. MERICA has been elected President of The International Nickel Company of Canada, Ltd., in succession to Dr. John F. Thompson. The latter continues to be Chairman of the Board and Chief Officer of the Company.

PROFESSOR A. PORTEVIN has been elected a Foreign Member of the Royal Society.

DR. H. SUTTON has been awarded the Silver Medal of the Royal Aeronautical Society for his outstanding work, over many years, on metallurgy in aircraft design.

MR. W. J. THOMAS has been appointed a Director of Aluminium Wire and Cable Co., Ltd.

DR. G. K. WILLIAMS has been awarded the Gold Medal of the Institution of Mining and Metallurgy in recognition of his work in connection with research into the metallurgy of lead and zinc and the development of metallurgical processes. Dr. Williams was formerly General Superintendent of Broken Hill Associated Smelters Pty., Ltd., Port Pirie, South Australia, and is now Consultant to the Imperial Smelting Corporation, Ltd.

MR. R. W. WILSON has left the Physical Chemistry Department at Cambridge University and has taken up a post at the Thornton Research Centre of the Shell Petroleum Co., Ltd.

Deaths

The Editor regrets to announce the death of:

MR. CHARLES HENRY CARDER, on 2 May 1952, at the age of 64. Since 1936 Mr. Carder had been Director of the Cold-Rolled Brass and Copper Association.

MR. E. J. CARLYLE, Secretary-Treasurer of the Canadian Institute of Mining and Metallurgy from 1931 to 1949, at Victoria, B.C., on 27 April 1952.

Birthday Honours

We offer our congratulations to the following members whose names appeared in the Birthday Honours List:

DR. R. HIGGINS, Assistant Professor of Metallurgy, University College, Swansea (O.B.E.).

MR. S. KAY, Chief Engineer, The Cooper Roller Bearings Co., Ltd., King's Lynn (M.B.E.).

MR. W. A. C. NEWMAN, Chemist and Assayer, The Royal Mint (C.B.E.).

MR. R. LEWIS STUBBS, Secretary, British Non-Ferrous Smelters' Association (O.B.E.).

DR. H. SUTTON, Director, Materials Research and Development (Air), Ministry of Supply (C.B.E.).

NEWS OF LOCAL SECTIONS AND ASSOCIATED SOCIETIES

Meeting of Local Sections Committee

The annual meeting of the Local Sections Committee took place at the Institute's offices on 22 May, with Mr. E. A. Bolton in the Chair. Reports on the last session's activities were presented, and programmes for the forthcoming session were discussed.

London Local Section

A special meeting of the Section was held at 4 Grosvenor Gardens, London, S.W.1, on Thursday, 15 May 1952, at 7 p.m., when Professor Bruce Chalmers, D.Sc., Ph.D., of the University of Toronto, delivered a lecture on "Grain Boundaries". There was a large attendance, and a good discussion.

Sheffield Local Section

A special meeting of the Section was held at the University, St. George's Square, Sheffield on Monday, 12 May at 7.30 p.m. An invitation to attend this meeting was extended to members of several kindred societies and also to members of the Birmingham Section.

At this meeting Professor Bruce Chalmers, D.Sc., Ph.D., of the University of Toronto, delivered an address entitled

Some Aspects of Solidification of Metals

After a brief discussion of the significance of the sharp melting point that is characteristic of crystalline substances, Professor Chalmers described the techniques by means of which the process of freezing is being studied quantitatively.

Conditions are arranged so that the freezing process is essentially unidirectional, and the speed of solidification and the temperature gradient are controlled or measured. The influence of these variables on the freezing of "pure" metals was discussed with particular reference to the "macromosaic" substructure and to dendritic freezing, which occurs only when the melt is supercooled.

When the metal is not pure, two further substructures are observed, namely a "cellular structure" and "banding". These were explained in terms of the redistribution of solute during freezing, which may produce a zone in the liquid that is "constitutionally supercooled", that is, supercooled because of a change of composition and not because of a change of temperature. The presence of such a zone accounts for dendritic freezing under conditions that preclude "thermal

supercooling", as in the interior of an ingot of an impure metal or alloy. Finally, the direction of formation of boundaries between neighbouring crystals was discussed, and the conclusions were used to explain the preferred orientations that have been observed in the columnar zone of the ingot structure.

NEWS OF KINDRED SOCIETIES

Australian Institute of Metals

The Fifth Annual Meeting of the Australian Institute of Metals was held in Melbourne from 28 April to 2 May 1952, and was well attended.

On 1 May the first official Annual Lecture to the Institute was delivered by Professor J. P. Baxter, of the New South Wales College of Technology, on "Metallurgical and Chemical Problems Associated with the Development of Atomic Energy".

Federal Office Bearers elected for the year 1952–53 are as follows:

President: Professor E. T. M. White (Brisbane Branch).

Vice-Presidents: Mr. G. J. Brittingham (Port Kembla Branch) and Professor H. K. Worner (Melbourne Branch).

Honorary Secretary: Mr. E. G. Love.

Honorary Treasurer: Mr. E. D. Connor.

APPOINTMENTS VACANT

A COMPANY 20 miles west of London requires an assistant chemist for the analysis of copper- and nickel-base alloys, stainless steel. Knowledge of spectrographic analysis an advantage. Salary according to age, qualifications, and experience. Write Box V.248, Willing's, 362 Gray's Inn Road, London, W.C.1.

METALLURGIST for Investigational and Research Work on Aircraft Materials and Processes, which includes special new projects. Applicant should be well qualified and have industrial experience. Apply Personnel Manager, The Fairey Aviation Co., Ltd., Hayes, Middlesex.

METALLURGIST, preferably with experience in metallography and heat-treatment, is required for experimental work at the Research Laboratories of The General Electric Co., Ltd., North Wembley, Middlesex. Apply to the Staff Manager (Ref. GBLC/0/67) stating age, qualifications, and experience.

METALLURGIST required by Pressed Steel Co., Ltd., Cowley, Oxford, to assist in the control of materials and processes used in the mass production of a variety of products. Opportunity will be given for individual research. Applicants should possess first- or second-class Honours Degree in Metallurgy. Permanent appointment. Please write furnishing fullest details of training and experience, also stating age and salary required, to the Personnel Manager.

METALLURGISTS of Degree or A.I.M. status are required by the Nelson Research Laboratories, English Electric Co., Ltd., Stafford, for work on either High-Temperature Materials or Powder Metallurgy in a new section of the Laboratories. Previous experience desirable but not essential. Please write giving full details and quoting ref. 244B to Central Personnel Services, English Electric Co., Ltd., 24/30 Gillingham Street, London, S.W.1.

PLANNING ENGINEER required by the Division of Atomic Energy (Production), Research and Development Branch, Springfields Factory, Salwick, near Preston, Lancashire, for the specification and progressing of equipment orders, costing and budgeting, the programming and assessment of scientific effort, and the preparation of scientific appreciations.

Applicants must be at least 35 years of age and must have a minimum Higher School Certificate in a science subject. Possession of a Higher National Certificate in engineering, chemistry, or metallurgy may be an advantage. Previous experience in this type of work is essential. The post will be graded Senior Experimental Officer, and salary will be assessed according to qualifications and experience within the inclusive range £803–£1,033 p.a. Rates for women are somewhat lower.

Applications to Ministry of Supply, D.At.En.(P.), Risley, near Warrington, Lancashire, quoting reference 330.

PRINCIPAL METALLURGIST required by the Division of Atomic Energy (Production), Research and Development Branch, Springfields Factory, Salwick, near Preston, Lancashire, to direct teams engaged on industrial metallurgical processes such as melting, casting, powder metallurgy and fabrication, or in studying the physical metallurgy of such processes.

Applicants should be at least 31 years of age and must have either a first- or second-class honours degree in metallurgy or physics, or equivalent qualification. They must have had metallurgical research experience and be capable of originating new lines of scientific thought.

The post will be graded Principal Scientific Officer, and salary will be assessed according to qualifications and experience within the inclusive range £1,033–£1,377 p.a. Rates for women are somewhat lower. The post will carry F.S.S.U. benefits. Applications to Ministry of Supply, D.At.En(P.),Risley, near Warrington, Lancashire. quoting reference 327.

SENIOR CHEMIST required by the Division of Atomic Energy (Production), Research and Development Branch, Springfields Factory, Salwick, near Preston, Lancashire, to apply fundamental scientific information to the devlopment of industrial processes for the reduction, recovery, and chemical purification of unusual metals.

Applicants must have either a first- or second-class honours degree in chemistry, metallurgy, or physics, or equivalent qualification. They should be at least 26 years of age and have had at least three years' industrial research experience.

The post will be graded Senior Scientific Officer, and salary will be assessed according to qualifications and experience within the inclusive range £781–£980 p.a. Rates for women will be somewhat lower. The post will carry F.S.S.U. benefits. Applications to Ministry of Supply, D.At.En.(P.), Risley, near Warrington, Lancashire, quoting reference 329.

SENIOR PHYSICIST required by the Division of Atomic Energy (Production), Research and Development Branch, Springfields Factory, Salwick, near Preston, Lancashire, to lead a team engaged in either (*a*) physical measurements; control and instrumentation of industrial processes, and of the development of physical methods to assist other teams working on chemistry or metallurgy; or (*b*) operational research as applied to industrial processes.

Applicants must have either a first- or second-class honours degree in metallurgy or physics, or equivalent qualification. They should be at least 26 years of age and must have had at least three years' post-graduate research experience.

The post will be graded Senior Scientific Officer, and salary will be assessed according to qualifications and experience within the inclusive range £781–£980 p.a. Rates for women are somewhat lower. The post will carry F.S.S.U. benefits. Applications to Ministry of Supply, D.At.En.(P.), Risley, near Warrington, Lancashire, quoting reference. 328.

SINTERED PRODUCTS LTD., Hamilton Road, Sutton-in-Ashfield, have a vacancy in their Development Laboratory. Experience in physical or powder metallurgy desirable. Permanent, progressive post. Apply in first instance to Local Ministry of Labour.

YOUNG PHYSICAL METALLURGIST required for light-alloy die-casting foundry of a subsidiary company in the West of Scotland. University degree essential. Knowledge of statistical methods of research an advantage. Appointment offers training facilities and support of a large technical research organization. Salary between £600 and £750, according to qualifications and experience.

Please apply to the Personnel Manager, The Glacier Metal Co., Ltd., Ealing Rd., Alperton, Middlesex.

APPOINTMENT WANTED

TECHNICAL/SALES REPRESENTATIVE. A.M.Inst.B.E., M.I.Brit.F., M.Inst.J.E., desires new appointment. Foundry trade—23 years. Technical and commercial. Iron and Steel—castings, piping, plates, tanks, &c. Sound connection London, South, and Midlands. Box No. 338, Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.